

search on anadromous fish passage in the Columbia River and its major tributaries for over 25 years. He initiated an adult salmon behavioral laboratory at Bonneville Dam on the Lower Columbia, resulting in advances in man's knowledge of fish physiology and performance in fishways. Earlier in 1975 he proposed a program of transporting juvenile fish from the Snake River to downstream release points below the lowest dams in the Columbia River. This program is expected to increase the survival rate of steelhead trout and spring chinook salmon.

Collins received his doctorate in biology from Harvard University and entered Federal Service in 1939. He was Director of the Coastal Zone and Estuarine Studies (CZES) Division of the Northwest Fisheries Center.

On 1 October, NOAA Administrator Robert M. White presented a Unit Citation plaque to Dayton L. Alverson, Director of the Northwest Fisheries Center, in a ceremony at the Center. With 211 members, the Center is the largest group so recognized. The award was for outstanding contributions to the NOAA/NMFS programs

in the following areas: 1) International Fisheries Activities and Law of the Sea; 2) Fisheries Development and Conservation Engineering; 3) Columbia River Basin Studies; 4) Environmental Conservation Studies; and 5) Reporting and Publishing of Research Results.

Following that presentation, White was given plaques for "Service to Fisheries" by William Saletic, representing the Pacific Northwest commercial fishing industry, and by Edward Manary, president of the Northwest Steelheaders, representing sport fishermen.

Foreign Fishery Developments

Sri Lanka Develops Marine Fisheries

The Asian Development Bank has loaned the Government of Sri Lanka \$3.1 million to finance the foreign exchange costs of a fisheries development project. The Sri Lanka project aims at promoting the development of coastal and offshore fisheries by exploiting stocks of pelagic fish resources 30-100 miles from the coast. New vessels to be acquired under the project are: 200 28-foot vessels; 30 38-foot vessels; and two 60-foot stern trawlers. Training and technical guidance are also included as part of the project, which is to be completed by the end of 1978. (Source: U.S. Embassy, Colombo.)

According to the NMFS Office of International Fisheries, Sri Lanka's

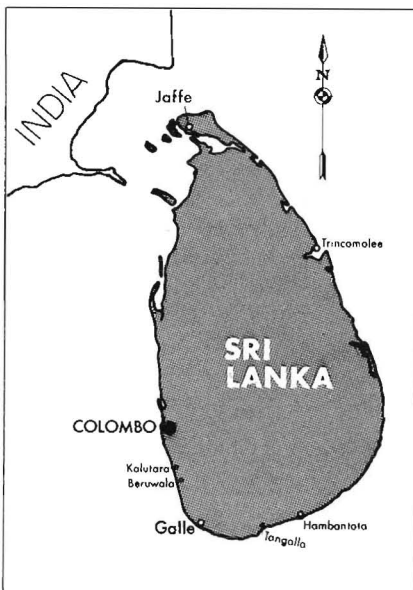
fisheries production reached the 100,000 metric ton level in 1972. Fully 98 percent of 1974 production was from coastal (99,000 metric tons) and inland (8,000 metric tons) fisheries. The remainder was the deep-sea fisheries catch of approximately 2,000 metric tons. Present annual domestic production is insufficient to supply local demand and about 17,000 metric tons of processed fish are imported each year.

At present, the fishing fleet exploiting the coastal fisheries of the island nation consists of about 17,000 non-powered craft, about 4,400 small craft mechanized with outboard motors up to 20 horsepower, about 2,100 28-foot FRP or wood vessels and 27 37½-foot steel vessels. In addition to the coastal fishing fleet, two 317-ton tuna vessels operate in the Indian Ocean and five 240-ton trawlers operate on the Wadge Bank off India's coast.

Colombo and Galle are the principal fishery ports. Fishery harbors are under construction at Beruwela, Mirissa, and Tangalla in the south, and at Trincomalee in the northeast. Freezing and cold storage facilities for fish are already available in Colombo and Galle; such facilities are planned for Beruwela, Mirissa, Tangalla, and Trincomalee.

Sri Lanka's fisheries project is designed to cut down the imports of fish by promoting the development of coastal and offshore fisheries. The general area of the fishery to be developed is along the southern coast of Sri Lanka, south of Colombo from Kalutara to Hambantota. Two 60-foot trawlers will operate, in a pilot program, from Trincomalee on the northeast coast.

The Fishery Cooperatives of Sri Lanka will receive loans from the Bank of Ceylon and the Peoples Bank to enable them to acquire fishing vessels, engines, fittings, gear, and navigational equipment.



Greenland Demands Fishery Extension to 100 Miles

The Executive Committee of the Greenland Council met with the Minister for Greenland on 26-27 November 1975, and the Council demanded the immediate extension of Greenland's fisheries limit to 100 miles. The demand was prompted by a recent increase of foreign shrimp fishing in Greenland's waters, particularly by the Faeroese, Soviets, and Spanish.

Greenland's traditional fishing income was based on cod and salmon

until recently, but the shortages of both cod and salmon, and the resultant quota restrictions of those species, led the Greenlanders to fish for shrimp. Their major fishing income is now from this species, and a peeling and canning industry has been developed in recent years. Fishers catch a majority of the shrimp in Disko Bay (west-central Greenland), but the rapid expansion of the international shrimp fleet in the outer Greenland waters has raised

concerns over the possibility of depletion of stocks. According to a Greenland Ministry source, the demand for an extended fisheries jurisdiction is based solely on that island's concern with the depletion of its shrimp stock.

The Danish Minister for Greenland refused the demand, and advised the Council to await the outcome of the upcoming U.N. Law of the Sea Conference. However, the Council did force him to agree to promise to press for a fisheries limit of 200 miles if the LOS Conference failed to reach an accord.

The Minister also reportedly agreed

to make arrangements for bilateral consultations with nations fishing for shrimp off Greenland's coast, and to appeal to members of the International Commission for Northwest Atlantic Fisheries (ICNAF) to limit fishing off Greenland.

The Minister also agreed to determine the possibility of arranging for special Danish inspectors to board foreign vessels fishing in Greenland's waters, and to investigate the possibility of increasing Greenland's salmon quota. The Minister's pledge on these various matters is subject to Government approval, and the Danish Government is reportedly discussing these

issues now.

According to the NMFS Office of International Fisheries, there are growing problems between the Danes and Greenlanders. In 1974, Denmark voted to enter the Common Market, even though the majority of the people of Greenland were opposed to the idea. Denmark also placed a limit on Greenland's salmon catch, over the strong opposition of the Greenlanders. In turn, the former colony has recently shocked the Danish Government by claiming that all mineral resources belong exclusively to the people of Greenland. (Sources: U.S. Embassy, Copenhagen, and news reports.)

Russians Test, Place Three New Classes of Stern Trawlers into Serial Production

After undergoing tests and sea trials, three new classes of stern trawlers have been placed into serial production by the Soviet Union. They include the *Gorizont*, *Barentsevo More*, and *Meridian* classes.

GORIZONT-CLASS TRAWLER SUPERCEDES ALTAI SERIES

The new *Gorizont*-class of large stern freezer trawlers, on the drawing boards since the early 1970's, was designed to supersede the older *Altai*-class stern trawlers, which have a smaller processing and storage capacity. For example, *Gorizont*-class vessels can process a maximum 90 metric tons of fish in 24 hours and store up to 2,000 metric tons in freezer holds, but *Altai* vessels can only process 50 metric tons in 24 hours and store a total of 1,500 metric tons. The *Altai* series was disadvantaged by high maintenance costs, with some vessels spending as much as 65 percent of potential operational time in repair shipyards.

Intended for use by the Soviet high-seas fishing fleet, *Gorizont*-class trawlers are equipped with the latest technology in trawling gear, hydro-acoustic fish-finding equipment, and modern processing lines. The class is one of the first to utilize the new "Dubl" trawling system in which two trawls are operated alternately so that no time is lost in hauling and resetting the nets. As one trawl is hauled, the other one is set. The *Gorizont* vessels

are fitted for both mid-water and bottom trawling at depths of up to 1,500 meters. Two processing lines produce canned and frozen fish; a fish meal and industrial fish oil plant is also located aboard. Frozen products can be stored in cold-storage holds, where a constant temperature of -28°C (7°F) is maintained; maximum storage capacity is 2,000 metric tons. Table 1 gives the basic specifications of the *Gorizont*-class large stern factory trawlers.

Table 1.—Basic specifications, *Gorizont*-class stern trawler.

Gross register tonnage	5,500 GRT
Deadweight tonnage	3,050 DWT
Displacement	7,950 DPL
Length	112.8 meters
Width (Beam)	17.3 meters
Draft (Full displacement)	6.8 meters
Speed (Maximum)	15 knots
Horsepower	7,000 h.p.
Endurance	100 days, 5,000 miles

The prototype of the new class, the *Gorizont*,¹ collided with a Moroccan freighter and sank in the English Channel on November 26. This vessel was built at the Okean Shipyard in Nikolaev on the Black Sea and was commissioned in 1975. The *Gorizont* was apparently on a shakedown cruise to test its fishing gear when the accident occurred. Other Soviet vessels in the area warned foreign ships to stay clear and rescued the crew. No casualties were reported.

¹The name of the first fishing vessel of a new Soviet class usually becomes the name of the entire class.

BARENTSEVO MORE CLASS GOES INTO SERIAL PRODUCTION

The *Barentsevo More* class of small stern trawlers, commissioned in 1973 and designed to replace the obsolete steam trawlers used in the Barents Sea, is going into serial production at the Baltija shipyard in Klaipeda, Lithuania. This class has the latest Soviet electronic navigational and fish finding equipment, and many of the on-board fish cleaning and dressing operations are automated. The main products processed aboard are chilled and salted fish, although some canned fish and semi-processed medicinal oil are also produced. The average daily catch capability is estimated to be about 10 metric tons.

The chief advantages of the *Barentsevo More* are its larger storage capacity, greater speed, and a trawl ramp longer (27 meters) than conventional stern trawlers such as the *Maiakovskii* class, which have 19-meter trawl ramps.

Equipped with the new "Dubl" trawling system, *Barentsevo More* vessels can carry out continuous deep-sea fishing operations with a set of two trawls operated alternately. As one trawl is hauled in and emptied, the other is set. Specifications for the *Barentsevo More*-class small stern trawlers are shown in Table 2.

MERIDIAN-CLASS TRAWLERS REPLACE MAIAKOVSKII CLASS

The *Meridian* class of Soviet-built large stern factory trawlers is going into serial production after two years

of extensive prototype testing and sea trials. To be constructed at the Chernomorskii Shipyards in Nikolaev on the Black Sea, this class is designed to supersede the older *Maiakovskii*-class conventional stern trawlers. *Meridian* vessels have larger holds and a greater processing capability than the *Maiakovskii* class. For example, freezer storage capacity in *Meridian*-class trawlers is 1,500 metric tons, over 1.5 times the *Maiakovskii* hold capacity of 900 metric tons. The processing potential for this class is double that of the older trawlers: *Meridian* vessels can produce 60 metric tons of frozen fish a day, whereas the *Maiakovskii* class produce a maximum of only 30 metric tons per day.

The high degree of mechanization and automation aboard the new trawlers permits a 15-20 percent reduction in crew. Thanks to greater storage capacity for provisions, water, and fuel, their potential cruising range (endurance) has increased from an 80-day maximum for the *Maiakovskii* class to 170 days, making the *Meridian* class an important addition to the Soviet high-seas fishing fleet.

Other innovations in the new class include the extension of the stern trawl ramp to 43 meters (from 19 meters for the *Maiakovskii* class) and the new "Dubl" trawling system. The "Dubl" system employs two trawls operating alternately. As one trawl is hauled in, the other is set, so fishing can be carried on without interruption.

Table 2.—Basic specifications, *Barentsevo* More-class stern trawler.

Gross register tonnage	1,503 GRT
Deadweight tonnage	601 DWT
Displacement	1,940 DPL
Draft	4.87 meters
Length	52 meters
Width (Beam)	13 meters
Speed (Maximum)	13 knots
Horsepower	2,000 h.p.
Endurance	33 days

Table 3.—Basic specifications, *Meridian*-class stern trawler.

Gross register tonnage	4,000 GRT ¹
Deadweight tonnage	1,980 DWT
Displacement	5,720 DPL
Length	103.1 meters
Width (Beam)	16.0 meters
Draft (Full displacement)	5.8 meters
Speed (Maximum)	14.5 knots
Horsepower	6,000 h.p.
Endurance	170 days, 7,000 miles

¹ Unconfirmed.

The prototype for the *Meridian* class was also built at the Chernomorskii Yards in Nikolaev. Launched in 1973, this vessel was tested for nearly two years before being commissioned in late 1974. The trials took place off

Africa and apparently were successful, since the new class has now been approved for serial production. Specifications for the *Meridian*-class large stern factory trawlers are shown in Table 3.

MEXICAN ABALONE FISHERY THREATENED

The Mexican abalone fishery was started in the 1860's and is primarily based on two species: "pink" and "green" abalone¹. Together they constitute about 90 percent of the total Mexican abalone catch. The remaining 10 percent of the catch is composed of three species referred to locally as "chino," "rayado," and "negro."

Almost 85 percent of Mexico's abalone resource is concentrated in the central area of the Baja Peninsula south of Cedros Island (Fig. 1). The

As the result of intensive fishing, abalone off Mexico's Baja Peninsula has been sharply reduced in abundance, according to Luis Kasuga Osaka, Director of the Mexican Fisheries Institute (INP). Abalone is one of the species reserved to Mexico's cooperative fishers and has proven a lucrative fishery. Each group of three fishers is capable of catching about 100 kg of abalone daily, bringing about 3,000 pesos (US \$240), or 1,000 pesos per fisher.

Director Kasuga is afraid that such high earnings could cause the decimation of Mexico's abalone resource. He points out that in Japan, abalone was so depleted that it was necessary to construct special culturing sites. The INP maintains a supply of 300,000 abalones in case the construction of culturing sites becomes necessary in Mexico.

Director Kasuga has recommended that a seasonal closure on harvesting abalone be enforced during the summer months when the species reproduces. He considers the preservation of abalone a critical issue, as the mollusk is only found off Mexico, New Zealand, South Africa, Japan, and California.

The actual status of the abalone resource, however, is even more serious than revealed by the declining

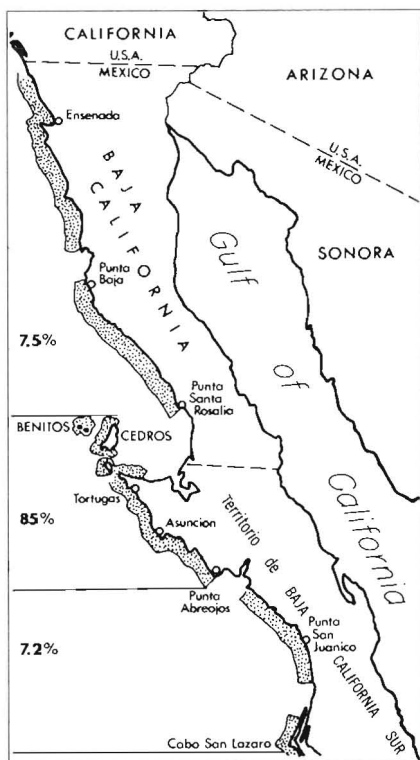


Figure 1.—Mexico's abalone grounds. Stippling indicates areas of high abalone concentration. The portion of Mexico's total abalone catch is indicated in the left-hand margin of the map.

abalone catch in 1973 was only 4.7 metric tons, a decline of 43 percent from the 8.2 metric tons harvested in 1968 (see table).

¹ In Mexico, these two species are referred to as "amarillo" and "azul," meaning "yellow" and "blue" abalone.

Mexico's abalone catch (1,000 metric tons), value (US\$1,000), and prices (US\$/kg) from 1960 to 1973.¹

Year	Catch	Value	Price
1960	6.0	—	— ²
1961	6.4	—	—
1962	7.1	—	—
1963	8.3	2,231	—
1964	7.6	2,038	—
1965	7.8	2,108	—
1966	6.7	1,806	6.45
1967	6.4	1,852	6.76
1968	8.2	2,380	7.00
1969	6.9	2,004	6.91
1970	6.7	1,847	6.60
1971	6.4	1,902	6.56
1972	5.4	2,333	10.60
1973	4.7	1,992	9.96

¹ Source: "Yearbook of Fishery Statistics," FAO.

² Data prior to 1966 not available.

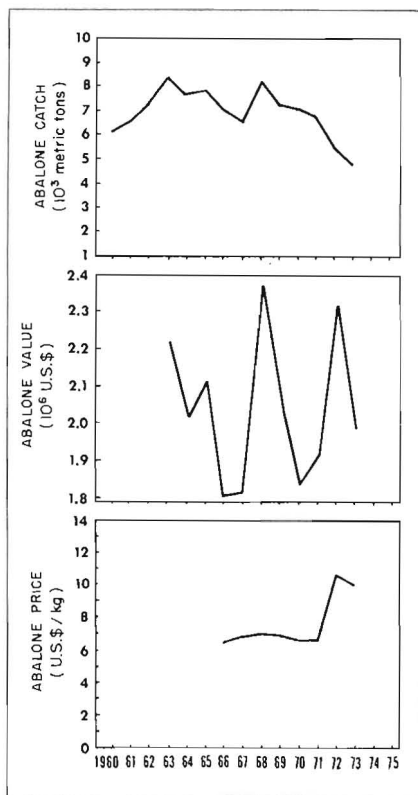


Figure 2.—Mexico's abalone catch, value, and prices, 1960-73, from FAO's "Yearbook of Fishery Statistics" (various years).

catch data (Fig. 2). According to studies conducted by Mexican biologists, almost 40 percent of the abalone currently harvested in one of Baja California's most productive abalone grounds is below the legal size. In another area the percentage of undersized abalone was even larger. The harvesting of such a large proportion of undersized abalones means that many abalone are taken before they reach sexual maturity and are thus unable to propagate the species.

The situation is further complicated because Mexican fishers traditionally shell abalone at sea in order to transport more of the meat in their small boats. This custom makes it extremely difficult for Mexican fishery authorities to adequately enforce the regulations prohibiting the harvest of small-sized abalone shells. As one Mexican biologist stated, "...to try to control the size of harvested abalone by the size of its meat is like attempting to infer the length of a fish by weighing its fillets."

The value of Mexican abalone

landings since 1963 (see table) has remained stable at around US\$2 million, but varied from a high of US\$2.4 million in 1968 to a low of US\$1.8 million in 1966.

The rapid increase in the price of abalone, which showed a small decline

in 1973 after the sharp increase between 1971 and 1972 (see table), has prevented the declining catch levels from drastically reducing the total value of abalone landings. (Sources: *El Sol*, Mexico City; *Gaeeta Cooperativa*; FAO Yearbook of Fishery Statistics.

Danish Blockade Fishing Ports

A total blockade of fishing ports in Denmark was established on 13 November 1975 by independent fishers dissatisfied with the prohibition on further herring and cod fishing in the North Sea which the Minister for Fisheries Poul Dalsager announced in mid-November, when the Danish quota was filled.

Started by fishers in the North Jutland ports of Esbjerg and Hanstholm, who tied their vessels side by side across the harbor entrance, the blockade movement spread to include virtually all Danish ports except Copenhagen and Helsingør. The immediate objective of the blockade was to stop the landing of fish by vessels of other countries which had not yet filled their quotas. In addition, it served to demonstrate the general discontent of fishers with the Government's policy. Unless the Government soon succeeded in breaking the blockade, it was feared that it could expand to affect ordinary shipping and ferry traffic.

Fisheries Minister Poul Dalsager was forced to return prematurely 15 November from the FAO conference in Rome to face the increasingly serious challenge to his fishing policy. His first act was to announce an agreement with Norway under which the Danish cod quota was increased by 2,500 tons in return for Norwegian fishers receiving 7,500 tons of the Danish whiting quota. This agreement was, Dalsager said, approved by the Northeast Atlantic Fisheries Commission, which was then meeting in London.

This modest quota increase—about one week's normal catch for the Danish fishing fleet—was not accepted by the fishers. They had long been opposed to foreign-flag vessels being permitted to land fish in Denmark (some of them are able to sell their fish at advantageous prices since they are not bound by the EEC subsidy system) and they were

determined to win some concession on this point. Dalsager, concerned with the increased unemployment if the fish processing factories were forced to shut down, refused that demand. He maintained in televised statements that the Danish fishers have long known that the quota would be filled before the end of the year and that, since they were participants in negotiations which set the quota, they should observe them. The chairman of the Danish Fisheries Association, Soren Knudson, however, responded that the fisheries organizations have not sponsored or encouraged the blockade, but he refused to put any pressure on the fishers to end it. The self-appointed blockade leaders set up an ad hoc organization and were acting independently of the old organization leadership.

Dalsager met 17 November with the Parliamentary Committee on Fisheries and won general support for his position. At that point, it was still impossible to predict the outcome, but the situation was brightening for the Government. The small fishers who fish in the Skagerrak and Kattegat, where the prohibition is not in effect, were anxious to return to sea and were reportedly willing to break the blockade of the larger fishing cutters which fish mainly for reduction fish in the North Sea. On the other hand, the Government had very limited means of physically breaking the blockade and recent labor troubles with blockades by trade unions of individual firms were being cited to prevent police interference. Public and editorial opinion, however, was beginning to run against the fishers and hope was being expressed that the blockade would end soon without causing interference with other shipping services.

According to the NMFS Office of International Fisheries, a ban on herring fishing would have an impact

on the Danish economy. Approximately 3-4,000 Danes fish for this species, and 6-7,000 persons work in plants which process herring for either fish meal or for human consumption. Additionally, the ban would cause the price of herring to rise, and the overall supply would probably be short, since both the Faeroese and Icelandic fishers had filled their quotas as well. However, Sweden, the Federal Republic of Germany, and the Netherlands had not filled their quotas and Danish fishers were exploring the possibility of landing their herring catches in the ports of those countries.

Restrictions on cod and herring fishing would also have an impact in the United States. In 1974, Denmark exported \$29 million worth of cod and \$0.5 million of herring to the United States. (Sources: U.S. Embassy, Copenhagen; *Politiken*; and *Borsen*.)

Norway Reports Difficult Year for Fish Industry

Last year, 1975, was one of the most difficult for Norway's fishing industry since World War II, the Norwegian Information Service reports. Catches, prices, and exports all fell as a result of reduced fish stocks, falling prices on the international market, and bad weather. This, combined with sharply rising costs, cut earnings in the industry and prompted extensive state aid which will be maintained at least until May.

Norwegian authorities are thus making 325 million kroner in direct subsidies and 125 million kroner in loans available to the fishing industry. Measures financed with these funds include income subsidies covering the first five months of 1976 and social payments and cost support for the whole of the year.

Among other things, a new "cod fund" was to be created alongside the existing fund for herring, and financed by a loan of 10 million kroner. The fund would provide temporary export credits for cod. This, together with 162.5 million kroner being spent in other ways, was expected to be adequate to maintain the cod prices which applied last autumn. A spokesman for the Norwegian Union of Fishermen indicated that the Union

hoped for better market conditions next year so that state subsidies could be cut substantially.

Norway's total fish catch last year reached 2,311,684 tons, according to provisional figures from the Fisheries Directorate. This is a drop of 78,549 tons or roughly 3.3 percent compared with 1974. The firsthand value of the catch fell nearly 16 percent from the 1974 record of 2,235.4 million kroner to 1,885.3 million (inclusive of state subsidies). The price per ton fell from 935 to 816 kroner. The export value of Norwegian fish and fish products fell

last year by about 400 million kroner to 2,780 million, the Directorate reports.

Statistics also show that Norwegian fishermen had an average net income of 36,636 kroner in 1973, an increase of 16.4 percent compared with the year before. The average industrial wage in Norway in the same year was 37,354 kroner. About 85 percent of the net income of the average fisherman came from fishing, less than two percent from farming or forestry and nearly 13 percent from other income sources, the figures from the Directorate of Fisheries show.

Soviets Reduce Size of Whaling Fleet

Vladimir Tverianovich, senior whale specialist for the Soviet Ministry of Fisheries, announced on 3 November 1975 that the Soviet Union was considerably reducing its whaling effort in the Antarctic. The *Iurii Dolgorukii*, one of three whaling motherships usually deployed in the Antarctic, was soon to be retired, a measure which Soviets felt would contribute to the preservation and conservation of the whale stocks. Two remaining motherships, the *Sovetskaiia Ukraina* based at Il'ichevsk on the Black Sea and the *Sovetskaiia Rossiia* from Vladivostok, had already started for the whaling grounds in the Southern Hemisphere.

Under the provisions of the International Whaling Commission (IWC), the whaling season is regulated according to species (through a quota system), whaling method, and area. The Soviet Union, Tverianovich said, has faithfully been fulfilling the recommendations of the IWC. Commission

observers would be on board the Soviet whaling vessels as well as the usual Ministry of Fisheries inspectors. Research biologists would also be taking part in the expedition to study the status of the whale stocks (Source: *Tass*.)

According to the NMFS Office of International Fisheries, the Soviet whaling fleet has included as many as seven whale motherships, each of which can support 13-20 catcher boats. In 1973, for example, the fleet consisted of five motherships and about 100 catcher boats. In 1975 the fleet was reduced to four motherships and about 80 catcher boats, so the ratio of boats to mothership was still 20:1.

Of the seven motherships, two (*Slava*, *Aleut*) have been sold for scrap. The *Iurii Dolgorukii*, as mentioned above, was retired in 1975, and Fisheries Ministry officials were trying to decide what to do with her. These three vessels were all constructed in

Soviet whaling motherships.

Name of vessel	Year built	Crew per vessel	GRT per vessel	Area of operations
<i>Iurii Dolgorukii</i>	1926	520	25,400	Ceased operations in 1975
<i>Slava</i>	1929	400	14,800	Ceased operations in 1968
<i>Vladivostok</i>	1962	400	17,200	North Pacific (since 1962/63)
<i>Dalnii Vostok</i>	1963	400	17,000	North Pacific (since 1963/64)
<i>Aleut</i>	1929	120	5,100	Ceased operations in 1959
<i>Sov. Ukraina</i>	1959	540	32,000	Antarctic (since 1959/60)
<i>Sov. Rossiia</i>	1961	540	33,200	Antarctic (since 1961/62)
7 motherships		2,920	144,700	Antarctic and North Pacific
100 Catcher boats	1937-1964	30	840	Antarctic and North Pacific
Total (Est. 110 vessels)		5,920	228,700	Antarctic and North Pacific
Deployed in 1973 (108 vessels)		5,400	208,800	Antarctic and North Pacific
Deployed in 1975 (Est. 84 vessels)		4,280	166,600	Antarctic and North Pacific

the late 1920's and two of them were used for other purposes before being converted to whalers. All more than 45 years old, they were probably due for retirement despite the whale conservation movement.

The four remaining vessels were built in the late 1950's or early 1960's. It is not likely they will be retired in the near future for, even if whaling were completely prohibited, they are

also equipped to serve as fish-processing factoryships. Two of the vessels, the *Vladivostok* and *Dalnii Vostok*, are deployed in the Northern Pacific, while the *Sovetskaia Ukraina* and *Sovetskaia Rossiia* continue to operate in the Antarctic. They are on the 13th and 15th Antarctic expeditions, respectively. Details on the composition of the Soviet whaling fleet are shown in the accompanying table.

Canada Signs Pacific Salmon Aid Agreement

The Federal Government of Canada and the Province of British Columbia have agreed to cooperate in the development of plans for a major program to expand significantly Canada's Pacific salmon resources, Environment Canada reports. A memorandum of understanding signed in Vancouver, B.C. last November by the Federal Minister of State for Fisheries, Roméo LeBlanc, and British Columbia's Minister of Recreation and Conservation, Jack Radford, cleared the way for federal-provincial cooperation in the preparation of coordinated program proposals.

At a morning meeting in Vancouver, they agreed to direct their staffs to prepare detailed proposals for a comprehensive salmonid enhancement program. Planning for the program, announced in Vancouver 24 March 1975 by Le Blanc, was already underway, and the federal government had com-

mitted more than \$1,000,000 for feasibility studies and planning activities last year. Development projects are due to commence in 1977, pending approval of the overall program by the federal Cabinet.

"I am gratified at the positive and enthusiastic response of the British Columbia Government in agreeing to cooperate in the planning phase of this exciting program," LeBlanc said. "Provincial support ensures a high degree of consultation in developing program proposals having such a significant economic effect on extensive areas of the B.C. coastline."

Radford stated that his department has particular responsibilities for freshwater recreational fisheries, but other provincial departments will also have significant interest in the proposed program. In developing streams for fish, some other uses for these streams, such as power generation or irrigation,

may have to be foregone. Land management practices may require modification in some watersheds to preserve the stream environment in a state suitable for fish. Radford also said the involvement of various provincial agencies with the Department of Recreation and Conservation would be coordinated by the Environment and Land Use Secretariat.

Glen Geen, Pacific regional Director-General of Fisheries Management for Environment Canada's Fisheries and Marine Service, was named chairman of a steering group responsible for the direction of planning activities. E. H. Vernon, Associate Deputy Minister (Fisheries), Department of Recreation and Conservation, heads provincial representatives in the group.

The program is aimed at significantly expanding the stocks of salmon to increase returns to the commercial fishery to \$400 million annually, while greatly enlarging the capacity of the sports fishery which already supports one million user-days of angling. The program also will ensure adequate resources for the traditional Indian food fishery. Achievement of these goals by applying proven enhancement techniques such as artificial spawning channels, hatcheries and fishways, could be attained by about 1990. Costs of the program, financed mainly by the federal government at an estimated \$250-300 million, should eventually be recovered in terms of increased returns to the salmon fisheries.

Publications

NMFS Issues Bicentennial Seafood Cookbook Series

A Seafood Heritage from America's First Industry is the first in a new Bicentennial series of booklets produced by the National Marine Fisheries Service featuring fish and shellfish cookery. Recipes range from "Angels on Horseback" (bacon-wrapped oyster appetizers) through "Beer Batter-Fried Fish," "Fish Salad Bunwiches," "Maine Fisherman's Coleslaw," and "Oyster Roast," to a "Tuna Barbecue" and more.

Recipes are conveniently proportioned for 25 persons for the many gatherings—club picnics, family reunions, fund-raisers, etc.—which will be scheduled during the Bicentennial

year. Further, the booklet includes entire menu plans, with an eye toward both taste and economy. Along with the menu suggestions, the well illustrated booklet includes historical vignettes appropriate to the nation's first 200 years and its long-time enjoyment of fish. Its historical anecdotes find Henry David Thoreau kindling a small fire to cook a "sweet and savory clam," and vegetarian Benjamin Franklin devising an elaborate rationale allowing him to partake of fresh-caught cod: "I balance'd some time between principle and inclination, till I recollected that, when the fish were opened, I saw smaller fish taken out of

their stomachs; then thought I, 'If you eat one another, I don't see why we mayn't eat you.' So I din'd upon cod very heartily."

The seafood booklets cost \$0.80 each and can be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Request Stock Number 003-020-00101-7.

Soft-Shell Clam Harvest, Salmon Diseases Noted

To facilitate an exchange of information between salmon growers and research scientists, the Washington Sea Grant Marine Advisory Program and the University of Washington College of Fisheries sponsored a work-